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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/796,970

03/11/2004

Are Lund

2004\_0400

4028

513 7590 06/22/2007  
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WASHINGTON, DC 20006-1021

EXAMINER

BHAT, NINA NMN

ART UNIT

PAPER NUMBER

1764

MAIL DATE

DELIVERY MODE

06/22/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/796,970	LUND ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	N. Bhat	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10-21-2005</u>  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,4-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Gudmundsson USP 5536893.

Gudmundsson teach an apparatus , note specifically Figure 3, which includes a system for the treatment and transportation of a hydrocarbon containing water, which includes a hydrocarbon source (element 1), a first heat exchanger (element 5), a reactor (6), a second heat exchanger (11) a separator which is shown (element 1c) and a pipeline or storage unit which is (found as element 8D which describes storage) not shown.[Note Column 6, lines 1 -67 and Column 9, lines 1-9]. With respect to claim 4, wherein chemicals can be added to the flow, Gudmundsson teach that adding small seed of hydrate crystals to the water to be supplied to the reactor permits the hydrates to be easily grown while in the reactor has been taught in Column 6, line 38-39]. With respect to claim 5, that the means are located between the separator for mixing the flow with a wet gas, this has been taught by adding pressurized water (7) into the reactor as well as adding water, note water line 15, after the reactor as shown in Figure 3 of Gudmundsson. With respect to claims 6 and 7, from the figure secondary separation equipment and heat exchanges are shown for recovering hydrocarbon gas from the flow and from Figure 3, it can be seen that the apparatus includes means for adding cooled condensate under pressure to the reactor as the fluid into the reactor is compressed as well as

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the water into the reactor is pressurized, the reactor includes a heat exchanger which can inherently function as claimed.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 2-3, and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gudmundsson.

Gudmundsson teaches the invention substantially as claimed for reasons delineated above. However, Gudmundsson does not teach that the reactor is coated with a water repellent material. Gudmundsson does not teach that a mixer is located between the first heat exchanger and the reactor.

Gudmundsson teaches a reactor which is capable of providing gas hydrates to a hydrocarbon and simultaneously adding water to the reactor vessel. To specifically coat the inside of a reactor which would improve the overall performance of the reactor would have been obvious design choice to one having ordinary skill in the art with respect to designing a reactor. Reactor materials of construction are selected based on the application of the reactor and what

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is to be reacted within the reactor, the reactor described by Gudmundsson function equivalently for the same purposes taught by applicant therefore, to add a water repellent coating to the inside of the reactor would have been obvious if desired. With respect to a mixer located between the first heat exchanger and reactor, although not shown Gudmunsson does teach that mixing the water and the hydrate and gases are has been contemplated and describes that the mixing occurs in the region of element 10 where the nozzles are located. The function of mixing has been generically taught by Gudmunsson and to include a mixer to improve and or optimize reaction conditions in the system would have been an obvious improvement to one having ordinary skill in the art at one having ordinary skill in the art would recognize that mixing of the gas with the water, the seeds of hydrate would be much improved when intimate mixing of the ingredients takes place. With respect to claims 8-9 where the mixer is located between the first heat exchanger and reactor and the reactor is coated with a water repellent coating, this would have been obvious to one having ordinary skill for the reasons delineated above, i.e., coating the inside of the reactor and adding a mixer to improve and/or optimize the system overall performance would have been obvious, there is no criticality in adding mixer or the coating to the reactor and adding the mixer and coating are obvious expedients to one having ordinary skill in the art. With respect to claim 10, wherein chemicals are added to system and the system includes a mixer, mixing has been taught by Gudmunsson as well as adding seed hydrate which reads on adding a chemical and it maintained that applicant's invention is rendered obvious as a whole to one having ordinary skill in the art at the time invention was made.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Spencer teaches a system for selectively separating carbon dioxide from a multicomponent gaseous stream. Chen et al. teach a hydrotreating or hydrocracking process, the apparatus as described by Chen et al. includes a pipeline, a pump a heat exchanger,

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reactor and high pressure separator as well as a recycle stream. The apparatus as described by Chen et al. could read on applicant's apparatus if no weight is given to the preamble of the claim. JP2001279279 teach an apparatus, which comprises a reactor, connected to a pipeline; the hydrocarbon gas is hydrated to enable efficient storage and transportation.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Bhat whose telephone number is 571-272-1397. The examiner can normally be reached on Monday-Friday, 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



N. Bhat  
Primary Examiner  
Art Unit 1764